

# Safety Form

## 1. How will your project work?

*Our green algae (Chlamydomonas) will produce hydrogen, but the hydrogen production is very low because oxygen can inactivate the hydrogenase. We try to inhibit the expression of Photosystem II proteins to make them produce less O<sub>2</sub>, thus increase the production of hydrogen.*

## 2. In your country, what are the laws and regulations that govern biosafety in research laboratories?

*There are four general laws and regulations. The first is about pathogeny and micro beings. The second is about the regulation about medical waste. The third is about the National standard and industry standard. The standards include the design of the research laboratory. The last is about the modeling organisms.*

## 3. What risks does your project pose at the laboratory stage? What actions are you taking to reduce those risks?

*First, our ideal production is hydrogen. Hydrogen is inflammable and explosive, so we must prevent hydrogen be leaked from the hydrogen container. At the present stage, the hydrogen production is not very big, so it will be safe even it leaks. However, to prevent anything might be dangerous, we strictly observe the laboratory safety rules. We prepared the technical container to store the hydrogen and do experiments at a relatively low temperature, thus to prevent the accident happening*

*Second, the gene modified green algae might do potential harm to the environment, so we cultivate the green algae at the closed system, so it*

*will not have access to the natural environment.*

***4. How would your project be used in the real world?***

*Our project will mainly be used in the factories. But since hydrogen is a kind of clean energy, we hope that our project can be applied in a kind of new factories'. And with the more clean energy used, the less fossil fuel will be used, in which case the air pollution and the water pollution will disappear at source, so that we can protect our environment.*

***5. What risks might your project pose, if it were fully developed into a real product that real people could use? What future work might you do to reduce those risks?***

*We believe our project will be largely applied in industry in the future. So the risk we face is just like what we face in the laboratory. However, there is truly something different between them because the hydrogen is for mass production in industry, so it should be more realistic and cautious to deal with safety.*

*First, our ideal production is hydrogen. Hydrogen is inflammable and explosive, so the factory must prevent hydrogen being leaked from the hydrogen container. The worker should strictly observe the industry safety rules. Technical containers are guaranteed to store the hydrogen and protective suits should be worn, thus to prevent the accident happening. Particularly, the ratio of the produced oxygen and hydrogen should be controlled strictly to avoid the explosion accident.*

*Second, the genetically modified green algae might do potential harm to the environment, so the green algae should be cultivated at the industrialized closed system, in which case it will have no access to the natural environment.*